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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,779	12/30/2003	Eung Don Lee	2013P154	1072

8791 7590 03/19/2008

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EXAMINER	
SHAH, PARAS D	

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
03/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/749,779	LEE ET AL.	
	Examiner	Art Unit	
	PARAS SHAH	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *29 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Arguments filed on 01/29/2008. Claims 1-6 are pending and have been examined. The Applicants' amendment and remarks have been carefully considered, but they are not persuasive and do not place the claims in condition for allowance. Accordingly, this action has been made FINAL.

2. All previous objections and rejections directed to the Applicant's disclosure and claims not discussed in this Office Action have been withdrawn by the Examiner.

Response to Arguments

3. Applicant's arguments, see pages 4-6, filed on 01/29/2008, with respect to the rejection(s) of claim(s) 1, 3, 4 and 6 under Kim *et al.* in view of Jabri *et al.* under 103(a) have been fully considered and are not persuasive.

In response to the first argument presented by the Applicants, the Applicants argue that linear interpolation is not disclosed before comparison in the reference by Kim. Further. the Applicants argue that the secondary reference Jabri also does not disclose that linear interpolation is applied to two different pitch delays. The Examiner traverses this argument by first stating that the present claim does not indicate that linear interpolation is done for both the closed and open loop pitch delays. Further, Jabri does teach the use of linear interpolation for pitch search, specifically for closed loop pitch (see Figure 17 and col. 14, lines 4-8. fractional pitch search for closed loop analysis, and see col. 17, lines 49-52, fractional pitch search uses a interpolation filter).

In response to the second argument, the Applicants argue that the pitch predictor is based on a single pitch and is not based on past closed loop pitch delays. The Applicants further note that the cited portion in the Office Action is relevant to adaptive codebook search and not open loop search. The Examiner traverses this argument by first stating that the adaptive codebook search is utilized in order to determine the closed loop pitch in order to determine the open loon pitch. Further, in page 1563, right column, Fast Adaptive Codebook search, 1st paragraph a 5th order pitch predictor is used to determine the closed loop pitch (see page 1561, right column, sect. II. 5 lines from the bottom. Also, this predicted closed loop pitch is being used in the comparison and is based on past pitch delays as determined by the pitch predictor depending on the number of samples taken into consideration.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim *et al.* ("An Efficient Transcoding Algorithm for G.723.1 and EVRC Speech Coders") in view of Jabri *et al.* (6,829,579).

As to claims 1 and 4, Kim *et al.* teaches

an apparatus for converting a pitch delay using linear prediction in speech transcoding, the apparatus comprising: (see page 1562, sect. III, A. Transcoding from G.723.1 to EVRC, lines 1-5)(e.g. The citation describes the linear prediction and the converting of pitch. It should be noted that the conversion from G.723.1 to EVRC transcoding process and system is being referred to from the reference Kim *et al.* The Kim *et al.* reference shows the inclusion of the same transcoding structure but with more elements. Hence, the reverse can be done as well. Namely, EVRC to G.723.1 as shown in on page 1563, left column, see Figure 2),

a closed-loop pitch delay to make the closed-loop pitch delay fit in a search section for open-loop pitch delays (see page 1562, sect. III, A. Transcoding from G.723.1 to EVRC, lines 1-5 and page 1562, right column, "Open loop pitch estimation", 1st paragraph, open loop pitch and closed-loop pitch), to thereby obtain a changed closed-loop pitch delay (page 1562, right column, "open loop pitch estimation," 1st paragraph) (e.g. From the previous citation it is obvious that the closed-loop pitch delay will change as a result of interpolation for the open loop pitch as analysis proceeds from frame to frame.);

a predicted value calculating portion, which calculates a predicted pitch delay using linear prediction, based on past closed-loop pitch delays of the G.723.1 speech encoder (see page 1563, right column, Fast Adaptive Codebook search, 1st paragraph) (e.g. The pitch prediction is used to predict the pitch);

a difference-calculating portion, which calculates a difference between the changed closed-loop pitch delay and the calculated predicted pitch delay (see

page 1562, right column, 2nd paragraph, distance of two pitch values) (e.g. The difference is being calculated in order to determine, whether it is less than a specified threshold);

a comparing portion, which compares the calculated difference with a predetermined threshold value and outputs the result of the comparison (see page 1562, right column, 2nd paragraph, threshold used is 10 samples.));

a pitch delay determining portion, which, when the calculated difference is less than the predetermined threshold value, determines the changed closed-loop pitch delay to be an open-loop pitch delay (page 1562, right column, 2nd paragraph) (e.g. The distance between the pitch is determined and if less than 10 samples then the closed loop pitch is determined.

However, Kim *et al.* does not specifically disclose the transcoding being done between a selected mode vocoder and a G.723.1. Further, Kim *et al.* does not specifically disclose the use of pitch delay detection, which detects the closed loop pitch delay of the G.723.1 and the incorporation of a liner interpolator.

Jabri *et al.* does teach the conversion between various coders (see col. 6, lines 23-32 and lines 33-46) (e.g. The Jabri *et al*. reference discloses a method of transcoding between various coders) and the use of linear interpolation (see col. 10, lines 21-30 and Figure 17) Further, it should be noted that the Jabri *et al.* reference states the ability to transcode among various coding standards (See col. 13, lines 4-12). Further, Jabri *et al.* discloses a conventional method for

detecting closed-loop pitch delay based on open loop pitch (see col. 14, lines 3-7).

It would have been obvious at the time the invention was made to have modified the transcoding scheme presented by Kim *et al.* with the transcoding among other coders and the use of a pitch delay-detecting unit for detecting a closed-loop delay presented by Jabri *et al.* The motivation to have combined the references involve the transcoding being done between CELP coders and to provide rate control (see Jabri *et al.* col. 6, lines 23-32) as well as a linear interpolator for the transcoding scheme presented by Kim *et al.* so that it can also utilize other coding techniques (SMV to G.723.1). The Kim reference further teaches the transcoding being done between various standards. Specifically, the ITU standard, where and example is the G.723.1 and the TIA standard, where an example is an EVRC. The SMV is also part of the TIA standard and would have been obvious to substitute an EVRC for an SMV coder to provide a transcoding mechanism. Also, the use of linear interpolator allows compatibility between different coders, which may have different time durations (see Jabri *et al.* col. 10, lines 21-26), which would be apparent in the transcoding scheme presented by Kim *et al.* between coders of different time durations.

As to claims 3 and 6, Kim *et al.* in view of Jabri *et al.* teaches all of the limitations as in claims 1 and 4, above.

Furthermore, Kim *et al.* teaches wherein when the calculated difference is equal to or more than the predetermined threshold value, the pitch delay determining portion determines the closed-loop pitch delay of the G.723.1 speech encoder that is obtained using a conventional method of detecting a open-loop pitch delay of the G.723.1 speech encoder to be the open-loop pitch delay of the G.723.1 speech encoder (see page 1562, right column, "Open-loop pitch estimation," 2nd paragraph) (e.g. The Kim *et al.* reference states that if the distance of the two pitch values are not less than a specified threshold then pitch smoothing is used to find the open-loop pitch delay with the use of the closed-loop pitch delay. The stated process can be done using the transcoding of EVRC to G.723.1 (see page 1563, left column, Figure 2) and hence the stated limitation of the claim has been met.).

6. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim *et al.* in view of Jabri *et al.* (6,829,579) as applied to claims 1 and 4 above, and further in view of Swaminathan *et al.* (US 5,734,789).

As to claims 2 and 5, Kim *et al.* in view of Jabri *et al.* teaches all of the limitations as in claims 1 and 4, above.

Furthermore, Kim *et al.* the translation of frame lengths between two codecs of length 30 ms, which corresponds to two frames of G.723.1 (page 1562, sect. III., A. Transcoding from G.723.1 to EVRC, 1st paragraph, and a 2:3 frame ratio is described)).

Furthermore, Jabri *et al.* discloses the interpolation (see col. 10, lines 21-30 and Figure 17) of the pitch delays to obtain a changed closed-loop delay (see col. 12, lines 36-40).

However, Kim *et al.* and Jabri *et al.* do not specifically disclose the extraction of two pitch parameters.

Swaminathan *et al.* does disclose the use of two pitch delays per frame (see col. 5, lines 38-42).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the extraction of pitch delays presented by Kim *et al.* and Jabri *et al.* with the extraction of two pitch delays. The motivation to have combined the references involve the incorporation of a pitch tracking in order to minimize the error of the pitch (see Swaminathan, col. 5, lines 43-52 and col. 6, lines 25-28) as would be appreciated by the pitch delay determination when transcoding for closer pitch estimates presented by Kim *et al.* with the modifications of Jabri *et al.* Further, the different transcoding schemes define a different duration of a speech signal when using different coding techniques (see Jabri *et al.*, col. 10, lines 42-45) since the translation of frame lengths between two codecs are different and would have been obvious to modify the pitch extraction based on this quality.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paras Shah whose telephone number is (571)270-1650. The examiner can normally be reached on MON.-THURS. 7:30a.m.-4:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571)272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paras Shah/
Examiner, Art Unit 2626

03/03/2008

/Patrick N. Edouard/

Supervisory Patent Examiner, Art Unit 2626